SEQUENCE LISTING

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<120> DEC-205 (LY 75)/DCL-1 INTERGENIC SPLICE VARIANTS ASSOCIATED WITH HODGKIN'S DISEASE, AND USES THEREOF

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<210> 1
<211> 5622
<212> DNA
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<222> (1)..(5619)

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ctg ctc ttc tgg ttc ttc gat ctc gcg gag ccc tct ggc cgc gca gct       96
Leu Leu Phe Trp Phe Phe Asp Leu Ala Glu Pro Ser Gly Arg Ala Ala
            20                  25                  30

aat gac ccc ttc acc atc gtc cat gga aat acg ggc aag tgc atc aag      144
Asn Asp Pro Phe Thr Ile Val His Gly Asn Thr Gly Lys Cys Ile Lys
        35                  40                  45

cca gtg tat ggc tgg ata gta gca gac gac tgt gat gaa act gag gac      192
Pro Val Tyr Gly Trp Ile Val Ala Asp Asp Cys Asp Glu Thr Glu Asp
    50                  55                  60

aag tta tgg aag tgg gtg tcc cag cat cgg ctc ttt cat ttg cac tcc      240
Lys Leu Trp Lys Trp Val Ser Gln His Arg Leu Phe His Leu His Ser
65                  70                  75                  80

caa aag tgc ctt ggc ctc gat att acc aaa tcg gta aat gag ctg aga      288
Gln Lys Cys Leu Gly Leu Asp Ile Thr Lys Ser Val Asn Glu Leu Arg
                85                  90                  95

atg ttc agc tgt gac tcc agt gcc atg ctg tgg tgg aaa tgt gag cac      336
Met Phe Ser Cys Asp Ser Ser Ala Met Leu Trp Trp Lys Cys Glu His
            100                 105                 110
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cac tct ctg tac gga gct gcc cgg tac cgg ctg gct ctg aag gat gga      384
His Ser Leu Tyr Gly Ala Ala Arg Tyr Arg Leu Ala Leu Lys Asp Gly
        115                 120                 125

cat ggc aca gca atc tca aat gca tct gat gtc tgg aag aaa gga ggc      432
His Gly Thr Ala Ile Ser Asn Ala Ser Asp Val Trp Lys Lys Gly Gly
    130                 135                 140

tca gag gaa agc ctt tgt gac cag cct tat cat gag atc tat acc aga      480
Ser Glu Glu Ser Leu Cys Asp Gln Pro Tyr His Glu Ile Tyr Thr Arg
145                 150                 155                 160

gat ggg aac tct tat ggg aga cct tgt gaa ttt cca ttc tta att gat      528
Asp Gly Asn Ser Tyr Gly Arg Pro Cys Glu Phe Pro Phe Leu Ile Asp
                165                 170                 175

ggg acc tgg cat cat gat tgc att ctt gat gaa gat cat agt ggg cca      576
Gly Thr Trp His His Asp Cys Ile Leu Asp Glu Asp His Ser Gly Pro
            180                 185                 190

tgg tgt gcc acc acc tta aat tat gaa tat gac cga aag tgg ggc atc      624
Trp Cys Ala Thr Thr Leu Asn Tyr Glu Tyr Asp Arg Lys Trp Gly Ile
        195                 200                 205

tgc tta aag cct gaa aac ggt tgt gaa gat aat tgg gaa aag aac gag      672
Cys Leu Lys Pro Glu Asn Gly Cys Glu Asp Asn Trp Glu Lys Asn Glu
    210                 215                 220

cag ttt gga agt tgc tac caa ttt aat act cag acg gct ctt tct tgg      720
Gln Phe Gly Ser Cys Tyr Gln Phe Asn Thr Gln Thr Ala Leu Ser Trp
225                 230                 235                 240

aaa gaa gct tat gtt tca tgt cag aat caa gga gct gat tta ctg agc      768
Lys Glu Ala Tyr Val Ser Cys Gln Asn Gln Gly Ala Asp Leu Leu Ser
                245                 250                 255

atc aac agt gct gct gaa tta act tac ctt aaa gaa aaa gaa ggc att      816
Ile Asn Ser Ala Ala Glu Leu Thr Tyr Leu Lys Glu Lys Glu Gly Ile
            260                 265                 270

gct aag att ttc tgg att ggt tta aat cag cta tac tct gct aga ggc      864
Ala Lys Ile Phe Trp Ile Gly Leu Asn Gln Leu Tyr Ser Ala Arg Gly
        275                 280                 285

tgg gaa tgg tca gac cac aaa cca tta aac ttt ctc aac tgg gat cca      912
Trp Glu Trp Ser Asp His Lys Pro Leu Asn Phe Leu Asn Trp Asp Pro
    290                 295                 300

gac agg ccc agt gca cct act ata ggt ggc tcc agc tgt gca aga atg      960
Asp Arg Pro Ser Ala Pro Thr Ile Gly Gly Ser Ser Cys Ala Arg Met
305                 310                 315                 320

gat gct gag tct ggt ctg tgg cag agc ttt tcc tgt gaa gct caa ctg     1008
Asp Ala Glu Ser Gly Leu Trp Gln Ser Phe Ser Cys Glu Ala Gln Leu
                325                 330                 335

ccc tat gtc tgc agg aaa cca tta aat aat aca gtg gag tta aca gat     1056
Pro Tyr Val Cys Arg Lys Pro Leu Asn Asn Thr Val Glu Leu Thr Asp
            340                 345                 350

gtc tgg aca tac tca gat acc cgc tgt gat gca ggc tgg ctg cca aat     1104
Val Trp Thr Tyr Ser Asp Thr Arg Cys Asp Ala Gly Trp Leu Pro Asn
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aat gga ttt tgc tat ctg ctg gta aat gaa agt aat tcc tgg gat aag     1152
Asn Gly Phe Cys Tyr Leu Leu Val Asn Glu Ser Asn Ser Trp Asp Lys
    370                 375                 380

gca cat gcg aaa tgc aaa gcc ttc agt agt gac cta atc agc att cat     1200
Ala His Ala Lys Cys Lys Ala Phe Ser Ser Asp Leu Ile Ser Ile His
385                 390                 395                 400

tct cta gca gat gtg gag gtg gtt gtc aca aaa ctc cat aat gag gat     1248
Ser Leu Ala Asp Val Glu Val Val Val Thr Lys Leu His Asn Glu Asp
                405                 410                 415

atc aaa gaa gaa gtg tgg ata ggc ctt aag aac ata aac ata cca act     1296
Ile Lys Glu Glu Val Trp Ile Gly Leu Lys Asn Ile Asn Ile Pro Thr
            420                 425                 430

tta ttt cag tgg tca gat ggt act gaa gtt act cta aca tat tgg gat     1344
Leu Phe Gln Trp Ser Asp Gly Thr Glu Val Thr Leu Thr Tyr Trp Asp
        435                 440                 445

gag aat gag cca aat gtt ccc tac aat aag acg ccc aac tgt gtt tcc     1392
Glu Asn Glu Pro Asn Val Pro Tyr Asn Lys Thr Pro Asn Cys Val Ser
    450                 455                 460

tac tta gga gag cta ggt cag tgg aaa gtc caa tca tgt gag gag aaa     1440
Tyr Leu Gly Glu Leu Gly Gln Trp Lys Val Gln Ser Cys Glu Glu Lys
465                 470                 475                 480

cta aaa tat gta tgc aag aga aag gga gaa aaa ctg aat gac gca agt     1488
Leu Lys Tyr Val Cys Lys Arg Lys Gly Glu Lys Leu Asn Asp Ala Ser
                485                 490                 495

tct gat aag atg tgt cct cca gat gag ggc tgg aag aga cat gga gaa     1536
Ser Asp Lys Met Cys Pro Pro Asp Glu Gly Trp Lys Arg His Gly Glu
            500                 505                 510

acc tgt tac aag att tat gag gat gag gtc cct ttt gga aca aac tgc     1584
Thr Cys Tyr Lys Ile Tyr Glu Asp Glu Val Pro Phe Gly Thr Asn Cys
        515                 520                 525

aat ctg act atc act agc aga ttt gag caa gaa tac cta aat gat ttg     1632
Asn Leu Thr Ile Thr Ser Arg Phe Glu Gln Glu Tyr Leu Asn Asp Leu
    530                 535                 540

atg aaa aag tat gat aaa tct cta aga aaa tac ttc tgg act ggc ctg     1680
Met Lys Lys Tyr Asp Lys Ser Leu Arg Lys Tyr Phe Trp Thr Gly Leu
545                 550                 555                 560


aga gat gta gat tct tgt gga gag tat aac tgg gca act gtt ggt gga     1728
Arg Asp Val Asp Ser Cys Gly Glu Tyr Asn Trp Ala Thr Val Gly Gly
                565                 570                 575

aga agg cgg gct gta acc ttt tcc aac tgg aat ttt ctt gag cca gct     1776
Arg Arg Arg Ala Val Thr Phe Ser Asn Trp Asn Phe Leu Glu Pro Ala
            580                 585                 590

tcc ccg ggc ggc tgc gtg gct atg tct act gga aag tct gtt gga aag     1824
Ser Pro Gly Gly Cys Val Ala Met Ser Thr Gly Lys Ser Val Gly Lys
        595                 600                 605
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tgg gag gtg aag gac tgc aga agc ttc aaa gca ctt tca att tgc aag      1872
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    610                 615                 620

aaa atg agt gga ccc ctt ggg cct gaa gaa gca tcc cct aag cct gat      1920
Lys Met Ser Gly Pro Leu Gly Pro Glu Glu Ala Ser Pro Lys Pro Asp
625                 630                 635                 640

gac ccc tgt cct gaa ggc tgg cag agt ttc ccc gca agt ctt tct tgt      1968
Asp Pro Cys Pro Glu Gly Trp Gln Ser Phe Pro Ala Ser Leu Ser Cys
                645                 650                 655

tat aag gta ttc cat gca gaa aga att gta aga aag agg aac tgg gaa      2016
Tyr Lys Val Phe His Ala Glu Arg Ile Val Arg Lys Arg Asn Trp Glu
            660                 665                 670

gaa gct gaa cga ttc tgc caa gcc ctt gga gca cac ctt tct agc ttc      2064
Glu Ala Glu Arg Phe Cys Gln Ala Leu Gly Ala His Leu Ser Ser Phe
        675                 680                 685

agc cat gtg gat gaa ata aag gaa ttt ctt cac ttt tta acg gac cag      2112
Ser His Val Asp Glu Ile Lys Glu Phe Leu His Phe Leu Thr Asp Gln
    690                 695                 700

ttc agt ggc cag cat tgg ctg tgg att ggt ttg aat aaa agg agc cca      2160
Phe Ser Gly Gln His Trp Leu Trp Ile Gly Leu Asn Lys Arg Ser Pro
705                 710                 715                 720

gat tta caa gga tcc tgg caa tgg agt gat cgt aca cca gtg tct act      2208
Asp Leu Gln Gly Ser Trp Gln Trp Ser Asp Arg Thr Pro Val Ser Thr
                725                 730                 735

att atc atg cca aat gag ttt cag cag gat tat gac atc aga gac tgt      2256
Ile Ile Met Pro Asn Glu Phe Gln Gln Asp Tyr Asp Ile Arg Asp Cys
            740                 745                 750

gct gct gtc aag gta ttt cat agg cca tgg cga aga ggc tgg cat ttc      2304
Ala Ala Val Lys Val Phe His Arg Pro Trp Arg Arg Gly Trp His Phe
        755                 760                 765

tat gat gat aga gaa ttt att tat ttg agg cct ttt gct tgt gat aca      2352
Tyr Asp Asp Arg Glu Phe Ile Tyr Leu Arg Pro Phe Ala Cys Asp Thr
    770                 775                 780

aaa ctt gaa tgg gtg tgc caa att cca aaa ggc cgt act cca aaa aca      2400
Lys Leu Glu Trp Val Cys Gln Ile Pro Lys Gly Arg Thr Pro Lys Thr
785                 790                 795                 800

cca gac tgg tac aat cca gac cgt gct gga att cat gga cct cca ctt      2448
Pro Asp Trp Tyr Asn Pro Asp Arg Ala Gly Ile His Gly Pro Pro Leu
                805                 810                 815

ata att gaa gga agt gaa tat tgg ttt gtt gct gat ctt cac cta aac      2496
Ile Ile Glu Gly Ser Glu Tyr Trp Phe Val Ala Asp Leu His Leu Asn
            820                 825                 830

tat gaa gaa gcc gtc ctg tac tgt gcc agc aat cac agc ttt ctt gcg      2544
Tyr Glu Glu Ala Val Leu Tyr Cys Ala Ser Asn His Ser Phe Leu Ala
        835                 840                 845

act ata aca tct ttt gtg gga cta aaa gcc atc aaa aac aaa ata gca      2592
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865                 870                 875                 880

cca ata gat gat cat ttt aca tac tca cga tat cca tgg cac cgc ttt     2688
Pro Ile Asp Asp His Phe Thr Tyr Ser Arg Tyr Pro Trp His Arg Phe
                885                 890                 895

cct gtg aca ttt gga gag gaa tgc ttg tac atg tct gcc aag act tgg     2736
Pro Val Thr Phe Gly Glu Glu Cys Leu Tyr Met Ser Ala Lys Thr Trp
            900                 905                 910

ctt atc gac tta ggt aaa cca aca gac tgt agt acc aag ttg ccc ttc     2784
Leu Ile Asp Leu Gly Lys Pro Thr Asp Cys Ser Thr Lys Leu Pro Phe
        915                 920                 925

atc tgt gaa aaa tat aat gtt tct tcg tta gag aaa tac agc cca gat     2832
Ile Cys Glu Lys Tyr Asn Val Ser Ser Leu Glu Lys Tyr Ser Pro Asp
    930                 935                 940

tct gca gct aaa gtg caa tgt tct gag caa tgg att cct ttt cag aat     2880
Ser Ala Ala Lys Val Gln Cys Ser Glu Gln Trp Ile Pro Phe Gln Asn
945                 950                 955                 960

aag tgt ttt cta aag atc aaa ccc gtg tct ctc aca ttt tct caa gca     2928
Lys Cys Phe Leu Lys Ile Lys Pro Val Ser Leu Thr Phe Ser Gln Ala
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agc gat acc tgt cac tcc tat ggt ggc acc ctt cct tca gtg ttg agc     2976
Ser Asp Thr Cys His Ser Tyr Gly Gly Thr Leu Pro Ser Val Leu Ser
            980                 985                 990

cag att gaa caa gac ttt att aca  tcc ttg ctt ccg gat  atg gaa gct   3024
Gln Ile Glu Gln Asp Phe Ile Thr  Ser Leu Leu Pro Asp  Met Glu Ala
        995                 1000                1005


act tta  tgg att ggt ttg cgc  tgg act gcc tat gaa  aag ata aac      3069
Thr Leu  Trp Ile Gly Leu Arg  Trp Thr Ala Tyr Glu  Lys Ile Asn
    1010                1015                1020

aaa tgg  aca gat aac aga gag  ctg acg tac agt aac  ttt cac cca      3114
Lys Trp  Thr Asp Asn Arg Glu  Leu Thr Tyr Ser Asn  Phe His Pro
    1025                1030                1035

tta ttg  gtt agt ggg agg ctg  aga ata cca gaa aat  ttt ttt gag      3159
Leu Leu  Val Ser Gly Arg Leu  Arg Ile Pro Glu Asn  Phe Phe Glu
    1040                1045                1050

gaa gag  tct cgc tac cac tgt  gcc cta ata ctc aac  ctc caa aaa      3204
Glu Glu  Ser Arg Tyr His Cys  Ala Leu Ile Leu Asn  Leu Gln Lys
    1055                1060                1065

tca ccg  ttt act ggg acg tgg  aat ttt aca tcc tgc  agt gaa cgc      3249
Ser Pro  Phe Thr Gly Thr Trp  Asn Phe Thr Ser Cys  Ser Glu Arg
    1070                1075                1080

cac ttt  gtg tct ctc tgt cag  aaa tat tca gaa gtt  aaa agc aga      3294
His Phe  Val Ser Leu Cys Gln  Lys Tyr Ser Glu Val  Lys Ser Arg
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cag acg  ttg cag aat gct tca  gaa act gta aag tat  cta aat aat      3339
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    1100                 1105                 1110

ctg tac  aaa ata atc cca aag  act ctg act tgg cac  agt gct aaa      3384
Leu Tyr  Lys Ile Ile Pro Lys  Thr Leu Thr Trp His  Ser Ala Lys
    1115                 1120                 1125

agg gag  tgt ctg aaa agt aac  atg cag ctg gtg agc  atc acg gac      3429
Arg Glu  Cys Leu Lys Ser Asn  Met Gln Leu Val Ser  Ile Thr Asp
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cct tac  cag cag gca ttc ctc  agt gtg cag gcg ctc  ctt cac aac      3474
Pro Tyr  Gln Gln Ala Phe Leu  Ser Val Gln Ala Leu  Leu His Asn
    1145                 1150                 1155

tct tcc  tta tgg atc gga ctc  ttc agt caa gat gat  gaa ctc aac      3519
Ser Ser  Leu Trp Ile Gly Leu  Phe Ser Gln Asp Asp  Glu Leu Asn
    1160                 1165                 1170

ttt ggt  tgg tca gat ggg aaa  cgt ctt cat ttt agt  cgc tgg gct      3564
Phe Gly  Trp Ser Asp Gly Lys  Arg Leu His Phe Ser  Arg Trp Ala
    1175                 1180                 1185

gaa act  aat ggg caa ctc gaa  gac tgt gta gta tta  gac act gat      3609
Glu Thr  Asn Gly Gln Leu Glu  Asp Cys Val Val Leu  Asp Thr Asp
    1190                 1195                 1200

gga ttc  tgg aaa aca gtt gat  tgc aat gac aat caa  cca ggt gct      3654
Gly Phe  Trp Lys Thr Val Asp  Cys Asn Asp Asn Gln  Pro Gly Ala
    1205                 1210                 1215

att tgc  tac tat tca gga aat  gag act gaa aaa gag  gtc aaa cca      3699
Ile Cys  Tyr Tyr Ser Gly Asn  Glu Thr Glu Lys Glu  Val Lys Pro
    1220                 1225                 1230

gtt gac  agt gtt aaa tgt cca  tct cct gtt cta aat  act ccg tgg      3744
Val Asp  Ser Val Lys Cys Pro  Ser Pro Val Leu Asn  Thr Pro Trp
    1235                 1240                 1245

ata cca  ttt cag aac tgt tgc  tac aat ttc ata ata  aca aag aat      3789
Ile Pro  Phe Gln Asn Cys Cys  Tyr Asn Phe Ile Ile  Thr Lys Asn
    1250                 1255                 1260

agg cat  atg gca aca aca cag  gat gaa gtt cat act  aaa tgc cag      3834
Arg His  Met Ala Thr Thr Gln  Asp Glu Val His Thr  Lys Cys Gln
    1265                 1270                 1275

aaa ctg  aat cca aaa tca cat  att ctg agt att cga  gat gaa aag      3879
Lys Leu  Asn Pro Lys Ser His  Ile Leu Ser Ile Arg  Asp Glu Lys
    1280                 1285                 1290

gag aat  aac ttt gtt ctt gag  caa ctg ctg tac ttc  aat tat atg      3924
Glu Asn  Asn Phe Val Leu Glu  Gln Leu Leu Tyr Phe  Asn Tyr Met
    1295                 1300                 1305

gct tca  tgg gtc atg tta gga  ata act tat aga aat  aat tct ctt      3969
Ala Ser  Trp Val Met Leu Gly  Ile Thr Tyr Arg Asn  Asn Ser Leu
    1310                 1315                 1320

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act gac  ggc ttc tgg gat att  caa acc ttt aaa gtt  att gaa gaa      4104
Thr Asp  Gly Phe Trp Asp Ile  Gln Thr Phe Lys Val  Ile Glu Glu
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gca gtt  tat ttt cac cag cac  agc att ctt gct tgt  aaa att gaa      4149
Ala Val  Tyr Phe His Gln His  Ser Ile Leu Ala Cys  Lys Ile Glu
    1370                1375                1380

atg gtt  gac tac aaa gaa gaa  cat aat act aca ctg  cca cag ttt      4194
Met Val  Asp Tyr Lys Glu Glu  His Asn Thr Thr Leu  Pro Gln Phe
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atg cca  tat gaa gat ggt att  tac agt gtt att caa  aaa aag gta      4239
Met Pro  Tyr Glu Asp Gly Ile  Tyr Ser Val Ile Gln  Lys Lys Val
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aca tgg  tat gaa gca tta aac  atg tgt tct caa agt  gga ggt cac      4284
Thr Trp  Tyr Glu Ala Leu Asn  Met Cys Ser Gln Ser  Gly Gly His
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ttg gca  agc gtt cac aac caa  aat ggc cag ctc ttt  ctg gaa gat      4329
Leu Ala  Ser Val His Asn Gln  Asn Gly Gln Leu Phe  Leu Glu Asp
    1430                1435                1440

att gta  aaa cgt gat gga ttt  cca cta tgg gtt ggg  ctc tca agt      4374
Ile Val  Lys Arg Asp Gly Phe  Pro Leu Trp Val Gly  Leu Ser Ser
    1445                1450                1455

cat gat  gga agt gaa tca agt  ttt gaa tgg tct gat  ggt agt aca      4419
His Asp  Gly Ser Glu Ser Ser  Phe Glu Trp Ser Asp  Gly Ser Thr
    1460                1465                1470

ttt gac  tat atc cca tgg aaa  ggc caa aca tct cct  gga aat tgt      4464
Phe Asp  Tyr Ile Pro Trp Lys  Gly Gln Thr Ser Pro  Gly Asn Cys
    1475                1480                1485

gtt ctc  ttg gat cca aaa gga  act tgg aaa cat gaa  aaa tgc aac      4509
Val Leu  Leu Asp Pro Lys Gly  Thr Trp Lys His Glu  Lys Cys Asn
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Ser Val  Lys Asp Gly Ala Ile  Cys Tyr Lys Pro Thr  Lys Ser Lys
    1505                1510                1515

aag ctg  tcc cgt ctt aca tat  tca tca aga tgt cca  gca gca aaa      4599
Lys Leu  Ser Arg Leu Thr Tyr  Ser Ser Arg Cys Pro  Ala Ala Lys
    1520                1525                1530

gag aat  ggg tca cgg tgg atc  cag tac aag ggt cac  tgt tac aag      4644
Glu Asn  Gly Ser Arg Trp Ile  Gln Tyr Lys Gly His  Cys Tyr Lys
    1535                1540                1545

tct gat  cag gca ttg cac agt  ttt tca gag gcc aaa  aaa ttg tgt      4689
Ser Asp  Gln Ala Leu His Ser  Phe Ser Glu Ala Lys  Lys Leu Cys
    1550                1555                1560
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Ser Lys  His Asp His Ser Ala  Thr Ile Val Ser Ile  Lys Asp Glu
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gat gag  aat aaa ttt gtg agc  aga ctg atg agg gaa  aat aat aac      4779
Asp Glu  Asn Lys Phe Val Ser  Arg Leu Met Arg Glu  Asn Asn Asn
    1580                 1585                 1590

att acc  atg aga gtt tgg ctt  gga tta tct caa cat  tct gtt gac      4824
Ile Thr  Met Arg Val Trp Leu  Gly Leu Ser Gln His  Ser Val Asp
    1595                 1600                 1605

cag tct  tgg agt tgg tta gat  gga tca gaa gtg aca  ttt gtc aaa      4869
Gln Ser  Trp Ser Trp Leu Asp  Gly Ser Glu Val Thr  Phe Val Lys
    1610                 1615                 1620

tgg gaa  aat aaa agt aag agt  ggt gtt gga aga tgt  agc atg ttg      4914
Trp Glu  Asn Lys Ser Lys Ser  Gly Val Gly Arg Cys  Ser Met Leu
    1625                 1630                 1635

ata gct  tca aat gaa act tgg  aaa aaa gtt gaa tgt  gaa cat ggt      4959
Ile Ala  Ser Asn Glu Thr Trp  Lys Lys Val Glu Cys  Glu His Gly
    1640                 1645                 1650

ttt gga  aga gtt gtc tgc aaa  gtg cct ctg gac tgt  cct tca tct      5004
Phe Gly  Arg Val Val Cys Lys  Val Pro Leu Asp Cys  Pro Ser Ser
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act tgg  att cag ttc caa gac  agt tgt tac att ttt  ctc caa gaa      5049
Thr Trp  Ile Gln Phe Gln Asp  Ser Cys Tyr Ile Phe  Leu Gln Glu
    1670                 1675                 1680

gcc atc  aaa gta gaa agc ata  gag gat gtc aga aat  cag tgt act      5094
Ala Ile  Lys Val Glu Ser Ile  Glu Asp Val Arg Asn  Gln Cys Thr
    1685                 1690                 1695

gac cat  gga gcg gac atg ata  agc ata cat aat gaa  gaa gaa aat      5139
Asp His  Gly Ala Asp Met Ile  Ser Ile His Asn Glu  Glu Glu Asn
    1700                 1705                 1710

gct ttt  ata ctg gat act ttg  aaa aag caa tgg aaa  ggc cca gat      5184
Ala Phe  Ile Leu Asp Thr Leu  Lys Lys Gln Trp Lys  Gly Pro Asp
    1715                 1720                 1725

gat atc  cta cta ggc atg ttt  tat gac aca gat gat  gcg agt ttc      5229
Asp Ile  Leu Leu Gly Met Phe  Tyr Asp Thr Asp Asp  Ala Ser Phe
    1730                 1735                 1740

aag tgg  ttt gat aat tca aat  atg aca ttt gat aag  tgg aca gac      5274
Lys Trp  Phe Asp Asn Ser Asn  Met Thr Phe Asp Lys  Trp Thr Asp
    1745                 1750                 1755

caa gat  gat gat gag gat tta  gtt gac acc tgt gct  ttt ctg cac      5319
Gln Asp  Asp Asp Glu Asp Leu  Val Asp Thr Cys Ala  Phe Leu His
    1760                 1765                 1770

atc aag  aca ggt gaa tgg aaa  aaa gga aat tgt gaa  gtt tct tct      5364
Ile Lys  Thr Gly Glu Trp Lys  Lys Gly Asn Cys Glu  Val Ser Ser
    1775                 1780                 1785

gtg gaa  gga aca cta tgc aaa  aca gct atc cca tac  aaa agg aaa      5409
Val Glu  Gly Thr Leu Cys Lys  Thr Ala Ile Pro Tyr  Lys Arg Lys
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Tyr Leu  Ser Asp Asn His Ile  Leu Ile Ser Ala Leu  Val Ile Ala
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agc acg  gta att ttg aca gtt  ttg gga gca atc att  tgg ttc ctg      5499
Ser Thr  Val Ile Leu Thr Val  Leu Gly Ala Ile Ile  Trp Phe Leu
    1820                1825                1830

tac aaa  aaa cat tct gat tct  cgt ttc acc aca gtt  ttt tca acc      5544
Tyr Lys  Lys His Ser Asp Ser  Arg Phe Thr Thr Val  Phe Ser Thr
    1835                1840                1845



gca ccc  caa tca cct tat aat  gaa gac tgt gtt ttg  gta gtt gga      5589
Ala Pro  Gln Ser Pro Tyr Asn  Glu Asp Cys Val Leu  Val Val Gly
    1850                1855                1860

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Glu Glu  Asn Glu Tyr Pro Val  Gln Phe Asp
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Asn Asp Pro Phe Thr Ile Val His Gly Asn Thr Gly Lys Cys Ile Lys
        35                  40                  45

Pro Val Tyr Gly Trp Ile Val Ala Asp Asp Cys Asp Glu Thr Glu Asp
    50                  55                  60

Lys Leu Trp Lys Trp Val Ser Gln His Arg Leu Phe His Leu His Ser
65                  70                  75                  80

Gln Lys Cys Leu Gly Leu Asp Ile Thr Lys Ser Val Asn Glu Leu Arg
                85                  90                  95

Met Phe Ser Cys Asp Ser Ser Ala Met Leu Trp Trp Lys Cys Glu His
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His Ser Leu Tyr Gly Ala Ala Arg Tyr Arg Leu Ala Leu Lys Asp Gly
        115                 120                 125
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His Gly Thr Ala Ile Ser Asn Ala Ser Asp Val Trp Lys Lys Gly Gly
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Ser Glu Glu Ser Leu Cys Asp Gln Pro Tyr His Glu Ile Tyr Thr Arg
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Asp Gly Asn Ser Tyr Gly Arg Pro Cys Glu Phe Pro Phe Leu Ile Asp
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Gly Thr Trp His His Asp Cys Ile Leu Asp Glu Asp His Ser Gly Pro
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Trp Cys Ala Thr Thr Leu Asn Tyr Glu Tyr Asp Arg Lys Trp Gly Ile
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Cys Leu Lys Pro Glu Asn Gly Cys Glu Asp Asn Trp Glu Lys Asn Glu
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Gln Phe Gly Ser Cys Tyr Gln Phe Asn Thr Gln Thr Ala Leu Ser Trp
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Lys Glu Ala Tyr Val Ser Cys Gln Asn Gln Gly Ala Asp Leu Leu Ser
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Ile Asn Ser Ala Ala Glu Leu Thr Tyr Leu Lys Glu Lys Glu Gly Ile
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Ala Lys Ile Phe Trp Ile Gly Leu Asn Gln Leu Tyr Ser Ala Arg Gly
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Trp Glu Trp Ser Asp His Lys Pro Leu Asn Phe Leu Asn Trp Asp Pro
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Asp Arg Pro Ser Ala Pro Thr Ile Gly Gly Ser Ser Cys Ala Arg Met
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Asp Ala Glu Ser Gly Leu Trp Gln Ser Phe Ser Cys Glu Ala Gln Leu
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Pro Tyr Val Cys Arg Lys Pro Leu Asn Asn Thr Val Glu Leu Thr Asp
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Val Trp Thr Tyr Ser Asp Thr Arg Cys Asp Ala Gly Trp Leu Pro Asn
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Asn Gly Phe Cys Tyr Leu Leu Val Asn Glu Ser Asn Ser Trp Asp Lys
370 375 380

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Ser Leu Ala Asp Val Glu Val Val Val Thr Lys Leu His Asn Glu Asp
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Ile Lys Glu Glu Val Trp Ile Gly Leu Lys Asn Ile Asn Ile Pro Thr
            420                 425                 430

Leu Phe Gln Trp Ser Asp Gly Thr Glu Val Thr Leu Thr Tyr Trp Asp
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Glu Asn Glu Pro Asn Val Pro Tyr Asn Lys Thr Pro Asn Cys Val Ser
    450                 455                 460

Tyr Leu Gly Glu Leu Gly Gln Trp Lys Val Gln Ser Cys Glu Glu Lys
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Leu Lys Tyr Val Cys Lys Arg Lys Gly Glu Lys Leu Asn Asp Ala Ser
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Ser Asp Lys Met Cys Pro Pro Asp Glu Gly Trp Lys Arg His Gly Glu
            500                 505                 510

Thr Cys Tyr Lys Ile Tyr Glu Asp Glu Val Pro Phe Gly Thr Asn Cys
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Asn Leu Thr Ile Thr Ser Arg Phe Glu Gln Glu Tyr Leu Asn Asp Leu
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Met Lys Lys Tyr Asp Lys Ser Leu Arg Lys Tyr Phe Trp Thr Gly Leu
545                 550                 555                 560

Arg Asp Val Asp Ser Cys Gly Glu Tyr Asn Trp Ala Thr Val Gly Gly
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Arg Arg Arg Ala Val Thr Phe Ser Asn Trp Asn Phe Leu Glu Pro Ala
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Ser Pro Gly Gly Cys Val Ala Met Ser Thr Gly Lys Ser Val Gly Lys
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Trp Glu Val Lys Asp Cys Arg Ser Phe Lys Ala Leu Ser Ile Cys Lys
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Lys Met Ser Gly Pro Leu Gly Pro Glu Glu Ala Ser Pro Lys Pro Asp
625                 630                 635                 640

Asp Pro Cys Pro Glu Gly Trp Gln Ser Phe Pro Ala Ser Leu Ser Cys
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Tyr Lys Val Phe His Ala Glu Arg Ile Val Arg Lys Arg Asn Trp Glu
            660                 665                 670

Glu Ala Glu Arg Phe Cys Gln Ala Leu Gly Ala His Leu Ser Ser Phe
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Ser His Val Asp Glu Ile Lys Glu Phe Leu His Phe Leu Thr Asp Gln
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Phe Ser Gly Gln His Trp Leu Trp Ile Gly Leu Asn Lys Arg Ser Pro
705                 710                 715                 720

Asp Leu Gln Gly Ser Trp Gln Trp Ser Asp Arg Thr Pro Val Ser Thr
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Ile Ile Met Pro Asn Glu Phe Gln Gln Asp Tyr Asp Ile Arg Asp Cys
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Ala Ala Val Lys Val Phe His Arg Pro Trp Arg Arg Gly Trp His Phe
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Tyr Asp Asp Arg Glu Phe Ile Tyr Leu Arg Pro Phe Ala Cys Asp Thr
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Lys Leu Glu Trp Val Cys Gln Ile Pro Lys Gly Arg Thr Pro Lys Thr
785                 790                 795                 800

Pro Asp Trp Tyr Asn Pro Asp Arg Ala Gly Ile His Gly Pro Pro Leu
                805                 810                 815

Ile Ile Glu Gly Ser Glu Tyr Trp Phe Val Ala Asp Leu His Leu Asn
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Tyr Glu Glu Ala Val Leu Tyr Cys Ala Ser Asn His Ser Phe Leu Ala
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Thr Ile Thr Ser Phe Val Gly Leu Lys Ala Ile Lys Asn Lys Ile Ala
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Asn Ile Ser Gly Asp Gly Gln Lys Trp Trp Ile Arg Ile Ser Glu Trp
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Pro Ile Asp Asp His Phe Thr Tyr Ser Arg Tyr Pro Trp His Arg Phe
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Pro Val Thr Phe Gly Glu Glu Cys Leu Tyr Met Ser Ala Lys Thr Trp
            900                 905                 910

Leu Ile Asp Leu Gly Lys Pro Thr Asp Cys Ser Thr Lys Leu Pro Phe
        915                 920                 925

Ile Cys Glu Lys Tyr Asn Val Ser Ser Leu Glu Lys Tyr Ser Pro Asp
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Ser Ala Ala Lys Val Gln Cys Ser Glu Gln Trp Ile Pro Phe Gln Asn
945                 950                 955                 960

Lys Cys Phe Leu Lys Ile Lys Pro Val Ser Leu Thr Phe Ser Gln Ala
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Ser Asp Thr Cys His Ser Tyr Gly Gly Thr Leu Pro Ser Val Leu Ser
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Gln Ile Glu Gln Asp Phe Ile Thr  Ser Leu Leu Pro Asp  Met Glu Ala
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Thr Leu  Trp Ile Gly Leu Arg  Trp Thr Ala Tyr Glu  Lys Ile Asn
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Lys Trp  Thr Asp Asn Arg Glu  Leu Thr Tyr Ser Asn  Phe His Pro
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Leu Leu  Val Ser Gly Arg Leu  Arg Ile Pro Glu Asn  Phe Phe Glu
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Glu Glu  Ser Arg Tyr His Cys  Ala Leu Ile Leu Asn  Leu Gln Lys
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Ser Pro  Phe Thr Gly Thr Trp  Asn Phe Thr Ser Cys  Ser Glu Arg
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His Phe  Val Ser Leu Cys Gln  Lys Tyr Ser Glu Val  Lys Ser Arg
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Gln Thr  Leu Gln Asn Ala Ser  Glu Thr Val Lys Tyr  Leu Asn Asn
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Pro Tyr  Gln Gln Ala Phe Leu  Ser Val Gln Ala Leu  Leu His Asn
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Ser Ser  Leu Trp Ile Gly Leu  Phe Ser Gln Asp Asp  Glu Leu Asn
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Phe Gly  Trp Ser Asp Gly Lys  Arg Leu His Phe Ser  Arg Trp Ala
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Glu Thr  Asn Gly Gln Leu Glu  Asp Cys Val Val Leu  Asp Thr Asp
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Gly Phe  Trp Lys Thr Val Asp  Cys Asn Asp Asn Gln  Pro Gly Ala
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Ile Cys  Tyr Tyr Ser Gly Asn  Glu Thr Glu Lys Glu  Val Lys Pro
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Val Asp  Ser Val Lys Cys Pro  Ser Pro Val Leu Asn  Thr Pro Trp
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Ile Pro  Phe Gln Asn Cys Cys  Tyr Asn Phe Ile Ile  Thr Lys Asn
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Arg His  Met Ala Thr Thr Gln  Asp Glu Val His Thr  Lys Cys Gln
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Lys Leu  Asn Pro Lys Ser His  Ile Leu Ser Ile Arg  Asp Glu Lys
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Glu Asn  Asn Phe Val Leu Glu  Gln Leu Leu Tyr Phe  Asn Tyr Met
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Ala Ser  Trp Val Met Leu Gly  Ile Thr Tyr Arg Asn  Asn Ser Leu
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Ala Val  Tyr Phe His Gln His  Ser Ile Leu Ala Cys  Lys Ile Glu
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Met Val  Asp Tyr Lys Glu Glu  His Asn Thr Thr Leu  Pro Gln Phe
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Met Pro  Tyr Glu Asp Gly Ile  Tyr Ser Val Ile Gln  Lys Lys Val
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Thr Trp  Tyr Glu Ala Leu Asn  Met Cys Ser Gln Ser  Gly Gly His
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Leu Ala  Ser Val His Asn Gln  Asn Gly Gln Leu Phe  Leu Glu Asp
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Ile Val  Lys Arg Asp Gly Phe  Pro Leu Trp Val Gly  Leu Ser Ser
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His Asp  Gly Ser Glu Ser Ser  Phe Glu Trp Ser Asp  Gly Ser Thr
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Phe Asp  Tyr Ile Pro Trp Lys  Gly Gln Thr Ser Pro  Gly Asn Cys
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Val Leu  Leu Asp Pro Lys Gly  Thr Trp Lys His Glu  Lys Cys Asn
    1490                1495                1500

Ser Val  Lys Asp Gly Ala Ile  Cys Tyr Lys Pro Thr  Lys Ser Lys
    1505                1510                1515

Lys Leu  Ser Arg Leu Thr Tyr  Ser Ser Arg Cys Pro  Ala Ala Lys
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Glu Asn  Gly Ser Arg Trp Ile  Gln Tyr Lys Gly His  Cys Tyr Lys
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Ser Asp  Gln Ala Leu His Ser  Phe Ser Glu Ala Lys  Lys Leu Cys
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Ser Lys  His Asp His Ser Ala  Thr Ile Val Ser Ile  Lys Asp Glu
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Gln Ser Trp Ser Trp Leu Asp Gly Ser Glu Val Thr Phe Val Lys
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Trp Glu Asn Lys Ser Lys Ser Gly Val Gly Arg Cys Ser Met Leu
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Tyr Leu Ser Asp Asn His Ile Leu Ile Ser Ala Leu Val Ile Ala
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Gly Pro Asp Asp Ile Leu Leu Gly Met Phe Tyr Asp Thr Asp Asp Ala
85                  90                  95                  100

agt ttc aag tgg ttt gat aat tca aat atg aca ttt gat aag tgg aca      392
Ser Phe Lys Trp Phe Asp Asn Ser Asn Met Thr Phe Asp Lys Trp Thr
                105                 110                 115

gac caa gat gat gat gag gat tta gtt gac acc tgt gct ttt ctg cac      440
Asp Gln Asp Asp Asp Glu Asp Leu Val Asp Thr Cys Ala Phe Leu His
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atc aag aca ggt gaa tgg aaa aaa gga aat tgt gaa gtt tct tct gtg      488
Ile Lys Thr Gly Glu Trp Lys Lys Gly Asn Cys Glu Val Ser Ser Val
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gaa gga aca cta tgc aaa aca gct atc cca tac aaa agg aaa tat tta      536
Glu Gly Thr Leu Cys Lys Thr Ala Ile Pro Tyr Lys Arg Lys Tyr Leu
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tca gat aac cac att tta ata tca gca ttg gtg att gct agc acg gta      584
Ser Asp Asn His Ile Leu Ile Ser Ala Leu Val Ile Ala Ser Thr Val
165                 170                 175                 180

att ttg aca gtt ttg gga gca atc att tgg ttc ctg tac aaa aaa cat      632
Ile Leu Thr Val Leu Gly Ala Ile Ile Trp Phe Leu Tyr Lys Lys His
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tct gat tct cgt ttc acc aca gtt ttt tca acc gca ccc caa tca cct      680
Ser Asp Ser Arg Phe Thr Thr Val Phe Ser Thr Ala Pro Gln Ser Pro
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tat aat gaa gac tgt gtt ttg gta gtt gga gaa gaa aat gaa tat cct      728
Tyr Asn Glu Asp Cys Val Leu Val Val Gly Glu Glu Asn Glu Tyr Pro
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Val Gln Phe Asp
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35 40 45

Ile Glu Asp Val Arg Asn Gln Cys Thr Asp His Gly Ala Asp Met Ile
50 55 60

Ser Ile His Asn Glu Glu Glu Asn Ala Phe Ile Leu Asp Thr Leu Lys
65 70 75 80

Lys Gln Trp Lys Gly Pro Asp Asp Ile Leu Leu Gly Met Phe Tyr Asp
85 90 95

Thr Asp Asp Ala Ser Phe Lys Trp Phe Asp Asn Ser Asn Met Thr Phe
100 105 110

Asp Lys Trp Thr Asp Gln Asp Asp Asp Glu Asp Leu Val Asp Thr Cys
115 120 125

Ala Phe Leu His Ile Lys Thr Gly Glu Trp Lys Lys Gly Asn Cys Glu
130 135 140

Val Ser Ser Val Glu Gly Thr Leu Cys Lys Thr Ala Ile Pro Tyr Lys
145 150 155 160

Arg Lys Tyr Leu Ser Asp Asn His Ile Leu Ile Ser Ala Leu Val Ile

165 170 175

Ala Ser Thr Val Ile Leu Thr Val Leu Gly Ala Ile Ile Trp Phe Leu
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Tyr Lys Lys His Ser Asp Ser Arg Phe Thr Thr Val Phe Ser Thr Ala
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gtc atg ccc cac gca gcg ctg tcc tcg ctc gtg ctg ctg agc ctc gcc 408
Met Pro His Ala Ala Leu Ser Ser Leu Val Leu Leu Ser Leu Ala
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act gcc atc gtc gcc gac tgt cct tca tct acc tgg gtc cag ttc caa 456
Thr Ala Ile Val Ala Asp Cys Pro Ser Ser Thr Trp Val Gln Phe Gln
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ggc agc tgt tat gct ttt ctt caa gta acc atc aat gtg gaa aac ata 504
Gly Ser Cys Tyr Ala Phe Leu Gln Val Thr Ile Asn Val Glu Asn Ile
35 40 45

gag gat gtc aga aaa cag tgc act gac cac ggg gca gac atg gta agc 552

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Ile His Asn Glu Glu Glu Asn Ala Phe Ile Leu Asp Thr Leu Gln Lys
    65                  70                  75

cga tgg aag ggt cca gat gat ctc ctg cta ggc atg ttc tat gac act      648
Arg Trp Lys Gly Pro Asp Asp Leu Leu Leu Gly Met Phe Tyr Asp Thr
80                  85                  90                  95

gat gat gca act ttc aag tgg tat gat cat tca aat atg aca ttc gac      696
Asp Asp Ala Thr Phe Lys Trp Tyr Asp His Ser Asn Met Thr Phe Asp
                100                 105                 110



aag tgg gca gat caa gat ggt gag gac cta gtt gat acc tgt ggt ttt      744
Lys Trp Ala Asp Gln Asp Gly Glu Asp Leu Val Asp Thr Cys Gly Phe
            115                 120                 125

ctg tac acc aag aca ggt gaa tgg aga aaa ggg gat tgt gaa atc tct      792
Leu Tyr Thr Lys Thr Gly Glu Trp Arg Lys Gly Asp Cys Glu Ile Ser
        130                 135                 140

tct gtg gag gga aca ctt tgc aaa gca gca atc cca tat gac aag aag      840
Ser Val Glu Gly Thr Leu Cys Lys Ala Ala Ile Pro Tyr Asp Lys Lys
    145                 150                 155

tat tta tca gat aac cac att tta ata tcg act ctg gtg atc gct agc      888
Tyr Leu Ser Asp Asn His Ile Leu Ile Ser Thr Leu Val Ile Ala Ser
160                 165                 170                 175

aca gta act ctg gca gtt ttg gga gcg atc att tgg ttc ctc tat aga      936
Thr Val Thr Leu Ala Val Leu Gly Ala Ile Ile Trp Phe Leu Tyr Arg
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aga aac gcg cgc tct ggc ttc acc tct ttt tca cct gca cca ctg tca      984
Arg Asn Ala Arg Ser Gly Phe Thr Ser Phe Ser Pro Ala Pro Leu Ser
            195                 200                 205

cct tac agt gat ggc tgt gcc ctg gta gtt gca gaa gaa gat gaa tat     1032
Pro Tyr Ser Asp Gly Cys Ala Leu Val Val Ala Glu Glu Asp Glu Tyr
        210                 215                 220

gct gtt cag ctg gac taagagtttg gtaatatcag gccagcatat tgartccatt     1087
Ala Val Gln Leu Asp
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Ser Cys Tyr Ala Phe Leu Gln Val Thr Ile Asn Val Glu Asn Ile Glu
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Asp Val Arg Lys Gln Cys Thr Asp His Gly Ala Asp Met Val Ser Ile
    50                  55                  60

His Asn Glu Glu Glu Asn Ala Phe Ile Leu Asp Thr Leu Gln Lys Arg
65                  70                  75                  80

Trp Lys Gly Pro Asp Asp Leu Leu Leu Gly Met Phe Tyr Asp Thr Asp
                85                  90                  95

Asp Ala Thr Phe Lys Trp Tyr Asp His Ser Asn Met Thr Phe Asp Lys
            100                 105                 110

Trp Ala Asp Gln Asp Gly Glu Asp Leu Val Asp Thr Cys Gly Phe Leu
        115                 120                 125

Tyr Thr Lys Thr Gly Glu Trp Arg Lys Gly Asp Cys Glu Ile Ser Ser
    130                 135                 140

Val Glu Gly Thr Leu Cys Lys Ala Ala Ile Pro Tyr Asp Lys Lys Tyr
145                 150                 155                 160

Leu Ser Asp Asn His Ile Leu Ile Ser Thr Leu Val Ile Ala Ser Thr
                165                 170                 175

Val Thr Leu Ala Val Leu Gly Ala Ile Ile Trp Phe Leu Tyr Arg Arg
            180                 185                 190

Asn Ala Arg Ser Gly Phe Thr Ser Phe Ser Pro Ala Pro Leu Ser Pro
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Val Gln Leu Asp
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gac tgt cct tcg tcc atc tgg gtt cag ttc caa ggc agc tgt tac act       96
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            20                  25                  30

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Phe Leu Gln Val Thr Ile Asn Val Glu Asn Ile Glu Asp Val Arg Lys
        35                  40                  45

cag tgt act gat cac ggg gca gac ctg gta agt ata cac aat gaa gaa      192
Gln Cys Thr Asp His Gly Ala Asp Leu Val Ser Ile His Asn Glu Glu
    50                  55                  60

gaa aac gca ttt ata ctg gac act tta caa aag cga tgg aaa ggc ccg      240
Glu Asn Ala Phe Ile Leu Asp Thr Leu Gln Lys Arg Trp Lys Gly Pro
65                  70                  75                  80

gat gat ctt ctg cta ggc atg ttt tat gac act gat gat gca agt ttc      288
Asp Asp Leu Leu Leu Gly Met Phe Tyr Asp Thr Asp Asp Ala Ser Phe
                85                  90                  95

aag tgg ttt gat cag tca aat atg aca ttc gac aag tgg gca gat gag      336
Lys Trp Phe Asp Gln Ser Asn Met Thr Phe Asp Lys Trp Ala Asp Glu
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gat ggt gag gac cta gtt gac acc tgt ggt ttt ctg tat gcc aag aca      384
Asp Gly Glu Asp Leu Val Asp Thr Cys Gly Phe Leu Tyr Ala Lys Thr
        115                 120                 125

ggt gaa tgg aga aaa gga aat tgt gaa atg tct tct gtg acr gga aca      432
Gly Glu Trp Arg Lys Gly Asn Cys Glu Met Ser Ser Val Xaa Gly Thr
    130                 135                 140

ctt tgc aaa aca gca atc cca tat gac aag aag tat tta tca gat aac      480
Leu Cys Lys Thr Ala Ile Pro Tyr Asp Lys Lys Tyr Leu Ser Asp Asn
145                 150                 155                 160

cac att tta ata tcg act ctg gtg atc gct agc aca gtg act ctg gca      528
His Ile Leu Ile Ser Thr Leu Val Ile Ala Ser Thr Val Thr Leu Ala
                165                 170                 175

gtt ttg gga gcg gtc att tgg ttc ctc tat aga agg agc gca cgc tct      576
Val Leu Gly Ala Val Ile Trp Phe Leu Tyr Arg Arg Ser Ala Arg Ser
            180                 185                 190

ggc ttc acc tct ttc tct cct gca cca caa tca cct tac agt gat ggc      624
Gly Phe Thr Ser Phe Ser Pro Ala Pro Gln Ser Pro Tyr Ser Asp Gly
        195                 200                 205

tgt gct ctg gta gtt gcg gaa gaa gat gaa tac tct gtt cag ctg gac      672
Cys Ala Leu Val Val Ala Glu Glu Asp Glu Tyr Ser Val Gln Leu Asp
    210                 215                 220

tgagagtttg ggaacatcag acgagcacac tgaacacctt gacaagaaat aatttcctat    732

gcaagattgt catgtaaaat ttgccacgga aaactgaacc ttttatggta ttccttattc    792

ttctaacaat attttcatgt attcaatgtg acaaaacata aaccttctga ttaaaaggaa    852
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aaaaagtagg tttcagaaaa ggaactagca cagagctaac ttacaggttt tcttaagtag 912

ttttcatttg agtaaatgaa agctacagta caataaagct ggtaaaacgc aaaaaaaaaa 972

aaaaaaa 979

<210> 11
<211> 224
<212> PRT
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<223> Xaa = Leu

<220>
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<222> (13)..(13)
<223> Xaa = Ala or Val

<220>
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<222> (142)..(142)
<223> Xaa = Thr

<400> 11

His Glu Ala Ser Xaa Val Leu Leu Ser Leu Ala Thr Xaa Ile Phe Ala
1 5 10 15

Asp Cys Pro Ser Ser Ile Trp Val Gln Phe Gln Gly Ser Cys Tyr Thr
20 25 30

Phe Leu Gln Val Thr Ile Asn Val Glu Asn Ile Glu Asp Val Arg Lys
35 40 45

Gln Cys Thr Asp His Gly Ala Asp Leu Val Ser Ile His Asn Glu Glu
50 55 60

Glu Asn Ala Phe Ile Leu Asp Thr Leu Gln Lys Arg Trp Lys Gly Pro
65 70 75 80

Asp Asp Leu Leu Leu Gly Met Phe Tyr Asp Thr Asp Asp Ala Ser Phe
85 90 95

Lys Trp Phe Asp Gln Ser Asn Met Thr Phe Asp Lys Trp Ala Asp Glu
100 105 110

Asp Gly Glu Asp Leu Val Asp Thr Cys Gly Phe Leu Tyr Ala Lys Thr
115 120 125

Gly Glu Trp Arg Lys Gly Asn Cys Glu Met Ser Ser Val Xaa Gly Thr
130 135 140

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Leu Cys Lys Thr Ala Ile Pro Tyr Asp Lys Lys Tyr Leu Ser Asp Asn
145                 150                 155                 160

His Ile Leu Ile Ser Thr Leu Val Ile Ala Ser Thr Val Thr Leu Ala
                165                 170                 175

Val Leu Gly Ala Val Ile Trp Phe Leu Tyr Arg Arg Ser Ala Arg Ser
            180                 185                 190

Gly Phe Thr Ser Phe Ser Pro Ala Pro Gln Ser Pro Tyr Ser Asp Gly
        195                 200                 205

Cys Ala Leu Val Val Ala Glu Glu Asp Glu Tyr Ser Val Gln Leu Asp
    210                 215                 220
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<210> 12
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<212> DNA
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<400> 12

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gtgctccgga gcgascacga cgactcggat cggtgacrgt agaagcgact gacaggaagc     60

aggtagaccc aagtcaaggt tccgtcgaca atgtgaaaag aagttcattg gtagttacac    120

cttttgtatc tcctacagtc tttcgtcaca tgactagtgc cccgtctgga ccattcatat    180

gtgttacttc ttcttttgcg taaatatgac ctgtgaaatg ttttcgctac ctttccgggc    240

ctactagaag acgatccgta caaaatactg tgactactac gttcaaagtt caccaaacta    300

gtcagtttat actgtaagct gttcacccgt ctactcctac cactcctgga tcaactgtgg    360

acaccaaaag acatacggtt ctgtccactt acctcttttc ctttaacact ttacagaaga    420

cactgycctt gtgaaacgtt ttgtcgttag ggtatactgt tcttcataaa tagtctattg    480

gtgtaaaatt atagctgaga ccactagcga tcgtgtcact gagaccgtca aaaccctcgc    540

cagtaaacca aggagatatc ttcctcgcgt gcgagaccga agtggagaaa gagaggacgt    600

ggtgttagtg gaatgtcact accgacacga gaccatcaac gccttcttct acttatgaga    660

caagtcgacc tgactctcaa acccttgtag tctgctcgtg tgacttgtgg aactgttctt    720

tattaaagga tacgttctaa cagtacattt taaacggtgc cttttgactt ggaaaatacc    780

ataaggaata agaagattgt tataaaagta cataagttac actgttttgt atttggaaga    840

ctaattttcc ttttttttcat ccaaagtctt ttccttgatc gtgtctcgat tgaatgtcca    900

aaagaattca tcaaaagtaa actcatttac tttcgatgtc atgttatttc gaccattttg    960

cgtttttttt ttttttttt                                                 979
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<210> 13
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gagctagttg acacctgtgc ctttttgcac accaagacag gtngattgga aaaaaggaaa 60

ctgtgaagtt tcttctgtgg aaggaaccct ttgtaaagca gctatcccat atgaaaagaa 120

atatttatca gataaccgca ttttaatatc agctttggtg attgctagca cagtaattct 180

gacagttctg ggagcagttg tttggttctt gtacaaaaga agtttggatt ctggtttcac 240

cacagttttt tcagctgcac accaatcacc ttataatgat gactgtgttt tagtagttgc 300

agaggaaaac gaatatgata ttcaatttaa ctaagatttt ggaaatatca gactaagaca 360

aataccttc agtgattcct ctgtaagatt tcaatataaa acctgataat gaaaattagt 420

ttttatgata tattacctta ttccagtaac attcattact cttatgtaaa atcactgatc 480

atg 483

<210> 14
<211> 27
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<220>
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<222> (1)..(27)

<400> 14
aaa gtg cct ctg ggc cct gat tac aca 27
Lys Val Pro Leu Gly Pro Asp Tyr Thr
1 5

<210> 15
<211> 9
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<400> 15

Lys Val Pro Leu Gly Pro Asp Tyr Thr
1 5

<210> 16
<211> 42
<212> DNA

<213> mammalian

<220>
<221> CDS
<222> (1)..(42)

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aaa gtg cct ctg gac tgt cct tca tct act tgg att cag ttc 42
Lys Val Pro Leu Asp Cys Pro Ser Ser Thr Trp Ile Gln Phe
1 5 10

<210> 17
<211> 14
<212> PRT
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<400> 17

Lys Val Pro Leu Asp Cys Pro Ser Ser Thr Trp Ile Gln Phe
1 5 10

<210> 18
<211> 42
<212> DNA
<213> mammalian

<220>
<221> CDS
<222> (1)..(42)

<400> 18
gct gcc gtc gcg gac tgt cct tca tct act tgg att cag ttc 42
Ala Ala Val Ala Asp Cys Pro Ser Ser Thr Trp Ile Gln Phe
1 5 10

<210> 19
<211> 14
<212> PRT
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<400> 19

Ala Ala Val Ala Asp Cys Pro Ser Ser Thr Trp Ile Gln Phe
1 5 10

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<212> DNA
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<220>
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<222> (1)..(5451)

<400> 20

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atg agg aca ggc tgg gcg acc cct cgc cgc ccg gcg ggg ctc ctc atg       48
Met Arg Thr Gly Trp Ala Thr Pro Arg Arg Pro Ala Gly Leu Leu Met
1               5                  10                  15

ctg ctc ttc tgg ttc ttc gat ctc gcg gag ccc tct ggc cgc gca gct       96
Leu Leu Phe Trp Phe Phe Asp Leu Ala Glu Pro Ser Gly Arg Ala Ala
            20                  25                  30

aat gac ccc ttc acc atc gtc cat gga aat acg ggc aag tgc atc aag      144
Asn Asp Pro Phe Thr Ile Val His Gly Asn Thr Gly Lys Cys Ile Lys
        35                  40                  45

cca gtg tat ggc tgg ata gta gca gac gac tgt gat gaa act gag gac      192
Pro Val Tyr Gly Trp Ile Val Ala Asp Asp Cys Asp Glu Thr Glu Asp
    50                  55                  60

aag tta tgg aag tgg gtg tcc cag cat cgg ctc ttt cat ttg cac tcc      240
Lys Leu Trp Lys Trp Val Ser Gln His Arg Leu Phe His Leu His Ser
65                  70                  75                  80

caa aag tgc ctt ggc ctc gat att acc aaa tcg gta aat gag ctg aga      288
Gln Lys Cys Leu Gly Leu Asp Ile Thr Lys Ser Val Asn Glu Leu Arg
                85                  90                  95

atg ttc agc tgt gac tcc agt gcc atg ctg tgg tgg aaa tgt gag cac      336
Met Phe Ser Cys Asp Ser Ser Ala Met Leu Trp Trp Lys Cys Glu His
            100                 105                 110

cac tct ctg tac gga gct gcc cgg tac cgg ctg gct ctg aag gat gga      384
His Ser Leu Tyr Gly Ala Ala Arg Tyr Arg Leu Ala Leu Lys Asp Gly
        115                 120                 125

cat ggc aca gca atc tca aat gca tct gat gtc tgg aag aaa gga ggc      432
His Gly Thr Ala Ile Ser Asn Ala Ser Asp Val Trp Lys Lys Gly Gly
    130                 135                 140

tca gag gaa agc ctt tgt gac cag cct tat cat gag atc tat acc aga      480
Ser Glu Glu Ser Leu Cys Asp Gln Pro Tyr His Glu Ile Tyr Thr Arg
145                 150                 155                 160

gat ggg aac tct tat ggg aga cct tgt gaa ttt cca ttc tta att gat      528
Asp Gly Asn Ser Tyr Gly Arg Pro Cys Glu Phe Pro Phe Leu Ile Asp
                165                 170                 175

ggg acc tgg cat cat gat tgc att ctt gat gaa gat cat agt ggg cca      576
Gly Thr Trp His His Asp Cys Ile Leu Asp Glu Asp His Ser Gly Pro
            180                 185                 190

tgg tgt gcc acc acc tta aat tat gaa tat gac cga aag tgg ggc atc      624
Trp Cys Ala Thr Thr Leu Asn Tyr Glu Tyr Asp Arg Lys Trp Gly Ile
        195                 200                 205

tgc tta aag cct gaa aac ggt tgt gaa gat aat tgg gaa aag aac gag      672
Cys Leu Lys Pro Glu Asn Gly Cys Glu Asp Asn Trp Glu Lys Asn Glu
    210                 215                 220

cag ttt gga agt tgc tac caa ttt aat act cag acg gct ctt tct tgg      720
Gln Phe Gly Ser Cys Tyr Gln Phe Asn Thr Gln Thr Ala Leu Ser Trp
225                 230                 235                 240
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aaa gaa gct tat gtt tca tgt cag aat caa gga gct gat tta ctg agc      768
Lys Glu Ala Tyr Val Ser Cys Gln Asn Gln Gly Ala Asp Leu Leu Ser
                245                 250                 255

atc aac agt gct gct gaa tta act tac ctt aaa gaa aaa gaa ggc att      816
Ile Asn Ser Ala Ala Glu Leu Thr Tyr Leu Lys Glu Lys Glu Gly Ile
            260                 265                 270

gct aag att ttc tgg att ggt tta aat cag cta tac tct gct aga ggc      864
Ala Lys Ile Phe Trp Ile Gly Leu Asn Gln Leu Tyr Ser Ala Arg Gly
        275                 280                 285

tgg gaa tgg tca gac cac aaa cca tta aac ttt ctc aac tgg gat cca      912
Trp Glu Trp Ser Asp His Lys Pro Leu Asn Phe Leu Asn Trp Asp Pro
    290                 295                 300

gac agg ccc agt gca cct act ata ggt ggc tcc agc tgt gca aga atg      960
Asp Arg Pro Ser Ala Pro Thr Ile Gly Gly Ser Ser Cys Ala Arg Met
305                 310                 315                 320

gat gct gag tct ggt ctg tgg cag agc ttt tcc tgt gaa gct caa ctg     1008
Asp Ala Glu Ser Gly Leu Trp Gln Ser Phe Ser Cys Glu Ala Gln Leu
                325                 330                 335

ccc tat gtc tgc agg aaa cca tta aat aat aca gtg gag tta aca gat     1056
Pro Tyr Val Cys Arg Lys Pro Leu Asn Asn Thr Val Glu Leu Thr Asp
            340                 345                 350

gtc tgg aca tac tca gat acc cgc tgt gat gca ggc tgg ctg cca aat     1104
Val Trp Thr Tyr Ser Asp Thr Arg Cys Asp Ala Gly Trp Leu Pro Asn
        355                 360                 365

aat gga ttt tgc tat ctg ctg gta aat gaa agt aat tcc tgg gat aag     1152
Asn Gly Phe Cys Tyr Leu Leu Val Asn Glu Ser Asn Ser Trp Asp Lys
    370                 375                 380

gca cat gcg aaa tgc aaa gcc ttc agt agt gac cta atc agc att cat     1200
Ala His Ala Lys Cys Lys Ala Phe Ser Ser Asp Leu Ile Ser Ile His
385                 390                 395                 400

tct cta gca gat gtg gag gtg gtt gtc aca aaa ctc cat aat gag gat     1248
Ser Leu Ala Asp Val Glu Val Val Val Thr Lys Leu His Asn Glu Asp
                405                 410                 415

atc aaa gaa gaa gtg tgg ata ggc ctt aag aac ata aac ata cca act     1296
Ile Lys Glu Glu Val Trp Ile Gly Leu Lys Asn Ile Asn Ile Pro Thr
            420                 425                 430

tta ttt cag tgg tca gat ggt act gaa gtt act cta aca tat tgg gat     1344
Leu Phe Gln Trp Ser Asp Gly Thr Glu Val Thr Leu Thr Tyr Trp Asp
        435                 440                 445

gag aat gag cca aat gtt ccc tac aat aag acg ccc aac tgt gtt tcc     1392
Glu Asn Glu Pro Asn Val Pro Tyr Asn Lys Thr Pro Asn Cys Val Ser
    450                 455                 460

tac tta gga gag cta ggt cag tgg aaa gtc caa tca tgt gag gag aaa     1440
Tyr Leu Gly Glu Leu Gly Gln Trp Lys Val Gln Ser Cys Glu Glu Lys
465                 470                 475                 480

cta aaa tat gta tgc aag aga aag gga gaa aaa ctg aat gac gca agt     1488
Leu Lys Tyr Val Cys Lys Arg Lys Gly Glu Lys Leu Asn Asp Ala Ser
                485                 490                 495
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tct gat aag atg tgt cct cca gat gag ggc tgg aag aga cat gga gaa      1536
Ser Asp Lys Met Cys Pro Pro Asp Glu Gly Trp Lys Arg His Gly Glu
            500                 505                 510

acc tgt tac aag att tat gag gat gag gtc cct ttt gga aca aac tgc      1584
Thr Cys Tyr Lys Ile Tyr Glu Asp Glu Val Pro Phe Gly Thr Asn Cys
        515                 520                 525

aat ctg act atc act agc aga ttt gag caa gaa tac cta aat gat ttg      1632
Asn Leu Thr Ile Thr Ser Arg Phe Glu Gln Glu Tyr Leu Asn Asp Leu
    530                 535                 540

atg aaa aag tat gat aaa tct cta aga aaa tac ttc tgg act ggc ctg      1680
Met Lys Lys Tyr Asp Lys Ser Leu Arg Lys Tyr Phe Trp Thr Gly Leu
545                 550                 555                 560

aga gat gta gat tct tgt gga gag tat aac tgg gca act gtt ggt gga      1728
Arg Asp Val Asp Ser Cys Gly Glu Tyr Asn Trp Ala Thr Val Gly Gly
                565                 570                 575


aga agg cgg gct gta acc ttt tcc aac tgg aat ttt ctt gag cca gct      1776
Arg Arg Arg Ala Val Thr Phe Ser Asn Trp Asn Phe Leu Glu Pro Ala
            580                 585                 590

tcc ccg ggc ggc tgc gtg gct atg tct act gga aag tct gtt gga aag      1824
Ser Pro Gly Gly Cys Val Ala Met Ser Thr Gly Lys Ser Val Gly Lys
        595                 600                 605

tgg gag gtg aag gac tgc aga agc ttc aaa gca ctt tca att tgc aag      1872
Trp Glu Val Lys Asp Cys Arg Ser Phe Lys Ala Leu Ser Ile Cys Lys
    610                 615                 620

aaa atg agt gga ccc ctt ggg cct gaa gaa gca tcc cct aag cct gat      1920
Lys Met Ser Gly Pro Leu Gly Pro Glu Glu Ala Ser Pro Lys Pro Asp
625                 630                 635                 640

gac ccc tgt cct gaa ggc tgg cag agt ttc ccc gca agt ctt tct tgt      1968
Asp Pro Cys Pro Glu Gly Trp Gln Ser Phe Pro Ala Ser Leu Ser Cys
                645                 650                 655

tat aag gta ttc cat gca gaa aga att gta aga aag agg aac tgg gaa      2016
Tyr Lys Val Phe His Ala Glu Arg Ile Val Arg Lys Arg Asn Trp Glu
            660                 665                 670

gaa gct gaa cga ttc tgc caa gcc ctt gga gca cac ctt tct agc ttc      2064
Glu Ala Glu Arg Phe Cys Gln Ala Leu Gly Ala His Leu Ser Ser Phe
        675                 680                 685

agc cat gtg gat gaa ata aag gaa ttt ctt cac ttt tta acg gac cag      2112
Ser His Val Asp Glu Ile Lys Glu Phe Leu His Phe Leu Thr Asp Gln
    690                 695                 700

ttc agt ggc cag cat tgg ctg tgg att ggt ttg aat aaa agg agc cca      2160
Phe Ser Gly Gln His Trp Leu Trp Ile Gly Leu Asn Lys Arg Ser Pro
705                 710                 715                 720

gat tta caa gga tcc tgg caa tgg agt gat cgt aca cca gtg tct act      2208
Asp Leu Gln Gly Ser Trp Gln Trp Ser Asp Arg Thr Pro Val Ser Thr
                725                 730                 735
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att atc atg cca aat gag ttt cag cag gat tat gac atc aga gac tgt      2256
Ile Ile Met Pro Asn Glu Phe Gln Gln Asp Tyr Asp Ile Arg Asp Cys
            740                 745                 750

gct gct gtc aag gta ttt cat agg cca tgg cga aga ggc tgg cat ttc      2304
Ala Ala Val Lys Val Phe His Arg Pro Trp Arg Arg Gly Trp His Phe
        755                 760                 765

tat gat gat aga gaa ttt att tat ttg agg cct ttt gct tgt gat aca      2352
Tyr Asp Asp Arg Glu Phe Ile Tyr Leu Arg Pro Phe Ala Cys Asp Thr
    770                 775                 780

aaa ctt gaa tgg gtg tgc caa att cca aaa ggc cgt act cca aaa aca      2400
Lys Leu Glu Trp Val Cys Gln Ile Pro Lys Gly Arg Thr Pro Lys Thr
785                 790                 795                 800

cca gac tgg tac aat cca gac cgt gct gga att cat gga cct cca ctt      2448
Pro Asp Trp Tyr Asn Pro Asp Arg Ala Gly Ile His Gly Pro Pro Leu
                805                 810                 815

ata att gaa gga agt gaa tat tgg ttt gtt gct gat ctt cac cta aac      2496
Ile Ile Glu Gly Ser Glu Tyr Trp Phe Val Ala Asp Leu His Leu Asn
            820                 825                 830

tat gaa gaa gcc gtc ctg tac tgt gcc agc aat cac agc ttt ctt gcg      2544
Tyr Glu Glu Ala Val Leu Tyr Cys Ala Ser Asn His Ser Phe Leu Ala
        835                 840                 845

act ata aca tct ttt gtg gga cta aaa gcc atc aaa aac aaa ata gca      2592
Thr Ile Thr Ser Phe Val Gly Leu Lys Ala Ile Lys Asn Lys Ile Ala
    850                 855                 860

aat ata tct ggt gat gga cag aag tgg tgg ata aga att agc gag tgg      2640
Asn Ile Ser Gly Asp Gly Gln Lys Trp Trp Ile Arg Ile Ser Glu Trp
865                 870                 875                 880

cca ata gat gat cat ttt aca tac tca cga tat cca tgg cac cgc ttt      2688
Pro Ile Asp Asp His Phe Thr Tyr Ser Arg Tyr Pro Trp His Arg Phe
                885                 890                 895

cct gtg aca ttt gga gag gaa tgc ttg tac atg tct gcc aag act tgg      2736
Pro Val Thr Phe Gly Glu Glu Cys Leu Tyr Met Ser Ala Lys Thr Trp
            900                 905                 910

ctt atc gac tta ggt aaa cca aca gac tgt agt acc aag ttg ccc ttc      2784
Leu Ile Asp Leu Gly Lys Pro Thr Asp Cys Ser Thr Lys Leu Pro Phe
        915                 920                 925

atc tgt gaa aaa tat aat gtt tct tcg tta gag aaa tac agc cca gat      2832
Ile Cys Glu Lys Tyr Asn Val Ser Ser Leu Glu Lys Tyr Ser Pro Asp
    930                 935                 940

tct gca gct aaa gtg caa tgt tct gag caa tgg att cct ttt cag aat      2880
Ser Ala Ala Lys Val Gln Cys Ser Glu Gln Trp Ile Pro Phe Gln Asn
945                 950                 955                 960

aag tgt ttt cta aag atc aaa ccc gtg tct ctc aca ttt tct caa gca      2928
Lys Cys Phe Leu Lys Ile Lys Pro Val Ser Leu Thr Phe Ser Gln Ala
                965                 970                 975

agc gat acc tgt cac tcc tat ggt ggc acc ctt cct tca gtg ttg agc      2976
Ser Asp Thr Cys His Ser Tyr Gly Gly Thr Leu Pro Ser Val Leu Ser
            980                 985                 990
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cag att gaa caa gac ttt att aca  tcc ttg ctt ccg gat  atg gaa gct   3024
Gln Ile Glu Gln Asp Phe Ile Thr  Ser Leu Leu Pro Asp  Met Glu Ala
        995                 1000                1005

act tta  tgg att ggt ttg cgc  tgg act gcc tat gaa  aag ata aac      3069
Thr Leu  Trp Ile Gly Leu Arg  Trp Thr Ala Tyr Glu  Lys Ile Asn
    1010                1015                1020



aaa tgg  aca gat aac aga gag  ctg acg tac agt aac  ttt cac cca      3114
Lys Trp  Thr Asp Asn Arg Glu  Leu Thr Tyr Ser Asn  Phe His Pro
    1025                1030                1035

tta ttg  gtt agt ggg agg ctg  aga ata cca gaa aat  ttt ttt gag      3159
Leu Leu  Val Ser Gly Arg Leu  Arg Ile Pro Glu Asn  Phe Phe Glu
    1040                1045                1050

gaa gag  tct cgc tac cac tgt  gcc cta ata ctc aac  ctc caa aaa      3204
Glu Glu  Ser Arg Tyr His Cys  Ala Leu Ile Leu Asn  Leu Gln Lys
    1055                1060                1065

tca ccg  ttt act ggg acg tgg  aat ttt aca tcc tgc  agt gaa cgc      3249
Ser Pro  Phe Thr Gly Thr Trp  Asn Phe Thr Ser Cys  Ser Glu Arg
    1070                1075                1080

cac ttt  gtg tct ctc tgt cag  aaa tat tca gaa gtt  aaa agc aga      3294
His Phe  Val Ser Leu Cys Gln  Lys Tyr Ser Glu Val  Lys Ser Arg
    1085                1090                1095

cag acg  ttg cag aat gct tca  gaa act gta aag tat  cta aat aat      3339
Gln Thr  Leu Gln Asn Ala Ser  Glu Thr Val Lys Tyr  Leu Asn Asn
    1100                1105                1110

ctg tac  aaa ata atc cca aag  act ctg act tgg cac  agt gct aaa      3384
Leu Tyr  Lys Ile Ile Pro Lys  Thr Leu Thr Trp His  Ser Ala Lys
    1115                1120                1125

agg gag  tgt ctg aaa agt aac  atg cag ctg gtg agc  atc acg gac      3429
Arg Glu  Cys Leu Lys Ser Asn  Met Gln Leu Val Ser  Ile Thr Asp
    1130                1135                1140

cct tac  cag cag gca ttc ctc  agt gtg cag gcg ctc  ctt cac aac      3474
Pro Tyr  Gln Gln Ala Phe Leu  Ser Val Gln Ala Leu  Leu His Asn
    1145                1150                1155

tct tcc  tta tgg atc gga ctc  ttc agt caa gat gat  gaa ctc aac      3519
Ser Ser  Leu Trp Ile Gly Leu  Phe Ser Gln Asp Asp  Glu Leu Asn
    1160                1165                1170

ttt ggt  tgg tca gat ggg aaa  cgt ctt cat ttt agt  cgc tgg gct      3564
Phe Gly  Trp Ser Asp Gly Lys  Arg Leu His Phe Ser  Arg Trp Ala
    1175                1180                1185

gaa act  aat ggg caa ctc gaa  gac tgt gta gta tta  gac act gat      3609
Glu Thr  Asn Gly Gln Leu Glu  Asp Cys Val Val Leu  Asp Thr Asp
    1190                1195                1200

gga ttc  tgg aaa aca gtt gat  tgc aat gac aat caa  cca ggt gct      3654
Gly Phe  Trp Lys Thr Val Asp  Cys Asn Asp Asn Gln  Pro Gly Ala
    1205                1210                1215
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att tgc  tac tat tca gga aat  gag act gaa aaa gag  gtc aaa cca      3699
Ile Cys  Tyr Tyr Ser Gly Asn  Glu Thr Glu Lys Glu  Val Lys Pro
    1220                 1225                 1230

gtt gac  agt gtt aaa tgt cca  tct cct gtt cta aat  act ccg tgg      3744
Val Asp  Ser Val Lys Cys Pro  Ser Pro Val Leu Asn  Thr Pro Trp
    1235                 1240                 1245

ata cca  ttt cag aac tgt tgc  tac aat ttc ata ata  aca aag aat      3789
Ile Pro  Phe Gln Asn Cys Cys  Tyr Asn Phe Ile Ile  Thr Lys Asn
    1250                 1255                 1260

agg cat  atg gca aca aca cag  gat gaa gtt cat act  aaa tgc cag      3834
Arg His  Met Ala Thr Thr Gln  Asp Glu Val His Thr  Lys Cys Gln
    1265                 1270                 1275

aaa ctg  aat cca aaa tca cat  att ctg agt att cga  gat gaa aag      3879
Lys Leu  Asn Pro Lys Ser His  Ile Leu Ser Ile Arg  Asp Glu Lys
    1280                 1285                 1290

gag aat  aac ttt gtt ctt gag  caa ctg ctg tac ttc  aat tat atg      3924
Glu Asn  Asn Phe Val Leu Glu  Gln Leu Leu Tyr Phe  Asn Tyr Met
    1295                 1300                 1305

gct tca  tgg gtc atg tta gga  ata act tat aga aat  aat tct ctt      3969
Ala Ser  Trp Val Met Leu Gly  Ile Thr Tyr Arg Asn  Asn Ser Leu
    1310                 1315                 1320

atg tgg  ttt gat aag acc cca  ctg tca tat aca cat  tgg aga gca      4014
Met Trp  Phe Asp Lys Thr Pro  Leu Ser Tyr Thr His  Trp Arg Ala
    1325                 1330                 1335

gga aga  cca act ata aaa aat  gag aag ttt ttg gct  ggt tta agt      4059
Gly Arg  Pro Thr Ile Lys Asn  Glu Lys Phe Leu Ala  Gly Leu Ser
    1340                 1345                 1350

act gac  ggc ttc tgg gat att  caa acc ttt aaa gtt  att gaa gaa      4104
Thr Asp  Gly Phe Trp Asp Ile  Gln Thr Phe Lys Val  Ile Glu Glu
    1355                 1360                 1365

gca gtt  tat ttt cac cag cac  agc att ctt gct tgt  aaa att gaa      4149
Ala Val  Tyr Phe His Gln His  Ser Ile Leu Ala Cys  Lys Ile Glu
    1370                 1375                 1380

atg gtt  gac tac aaa gaa gaa  cat aat act aca ctg  cca cag ttt      4194
Met Val  Asp Tyr Lys Glu Glu  His Asn Thr Thr Leu  Pro Gln Phe
    1385                 1390                 1395

atg cca  tat gaa gat ggt att  tac agt gtt att caa  aaa aag gta      4239
Met Pro  Tyr Glu Asp Gly Ile  Tyr Ser Val Ile Gln  Lys Lys Val
    1400                 1405                 1410

aca tgg  tat gaa gca tta aac  atg tgt tct caa agt  gga ggt cac      4284
Thr Trp  Tyr Glu Ala Leu Asn  Met Cys Ser Gln Ser  Gly Gly His
    1415                 1420                 1425

ttg gca  agc gtt cac aac caa  aat ggc cag ctc ttt  ctg gaa gat      4329
Leu Ala  Ser Val His Asn Gln  Asn Gly Gln Leu Phe  Leu Glu Asp
    1430                 1435                 1440


att gta  aaa cgt gat gga ttt  cca cta tgg gtt ggg  ctc tca agt      4374
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Ile Val  Lys Arg Asp Gly Phe  Pro Leu Trp Val Gly  Leu Ser Ser
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cat gat  gga agt gaa tca agt  ttt gaa tgg tct gat  ggt agt aca      4419
His Asp  Gly Ser Glu Ser Ser  Phe Glu Trp Ser Asp  Gly Ser Thr
    1460                 1465                 1470

ttt gac  tat atc cca tgg aaa  ggc caa aca tct cct  gga aat tgt      4464
Phe Asp  Tyr Ile Pro Trp Lys  Gly Gln Thr Ser Pro  Gly Asn Cys
    1475                 1480                 1485

gtt ctc  ttg gat cca aaa gga  act tgg aaa cat gaa  aaa tgc aac      4509
Val Leu  Leu Asp Pro Lys Gly  Thr Trp Lys His Glu  Lys Cys Asn
    1490                 1495                 1500

tct gtt  aag gat ggt gct att  tgt tat aaa cct aca  aaa tct aaa      4554
Ser Val  Lys Asp Gly Ala Ile  Cys Tyr Lys Pro Thr  Lys Ser Lys
    1505                 1510                 1515

aag ctg  tcc cgt ctt aca tat  tca tca aga tgt cca  gca gca aaa      4599
Lys Leu  Ser Arg Leu Thr Tyr  Ser Ser Arg Cys Pro  Ala Ala Lys
    1520                 1525                 1530

gag aat  ggg tca cgg tgg atc  cag tac aag ggt cac  tgt tac aag      4644
Glu Asn  Gly Ser Arg Trp Ile  Gln Tyr Lys Gly His  Cys Tyr Lys
    1535                 1540                 1545

tct gat  cag gca ttg cac agt  ttt tca gag gcc aaa  aaa ttg tgt      4689
Ser Asp  Gln Ala Leu His Ser  Phe Ser Glu Ala Lys  Lys Leu Cys
    1550                 1555                 1560

tca aaa  cat gat cac tct gca  act atc gtt tcc ata  aaa gat gaa      4734
Ser Lys  His Asp His Ser Ala  Thr Ile Val Ser Ile  Lys Asp Glu
    1565                 1570                 1575

gat gag  aat aaa ttt gtg agc  aga ctg atg agg gaa  aat aat aac      4779
Asp Glu  Asn Lys Phe Val Ser  Arg Leu Met Arg Glu  Asn Asn Asn
    1580                 1585                 1590

att acc  atg aga gtt tgg ctt  gga tta tct caa cat  tct gtt gac      4824
Ile Thr  Met Arg Val Trp Leu  Gly Leu Ser Gln His  Ser Val Asp
    1595                 1600                 1605

tgt cct  tca tct act tgg att  cag ttc caa gac agt  tgt tac att      4869
Cys Pro  Ser Ser Thr Trp Ile  Gln Phe Gln Asp Ser  Cys Tyr Ile
    1610                 1615                 1620

ttt ctc  caa gaa gcc atc aaa  gta gaa agc ata gag  gat gtc aga      4914
Phe Leu  Gln Glu Ala Ile Lys  Val Glu Ser Ile Glu  Asp Val Arg
    1625                 1630                 1635

aat cag  tgt act gac cat gga  gcg gac atg ata agc  ata cat aat      4959
Asn Gln  Cys Thr Asp His Gly  Ala Asp Met Ile Ser  Ile His Asn
    1640                 1645                 1650

gaa gaa  gaa aat gct ttt ata  ctg gat act ttg aaa  aag caa tgg      5004
Glu Glu  Glu Asn Ala Phe Ile  Leu Asp Thr Leu Lys  Lys Gln Trp
    1655                 1660                 1665

aaa ggc  cca gat gat atc cta  cta ggc atg ttt tat  gac aca gat      5049
Lys Gly  Pro Asp Asp Ile Leu  Leu Gly Met Phe Tyr  Asp Thr Asp
    1670                 1675                 1680
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gat gcg  agt ttc aag tgg ttt  gat aat tca aat atg  aca ttt gat      5094
Asp Ala  Ser Phe Lys Trp Phe  Asp Asn Ser Asn Met  Thr Phe Asp
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aag tgg  aca gac caa gat gat  gat gag gat tta gtt  gac acc tgt      5139
Lys Trp  Thr Asp Gln Asp Asp  Asp Glu Asp Leu Val  Asp Thr Cys
    1700                 1705                 1710

gct ttt  ctg cac atc aag aca  ggt gaa tgg aaa aaa  gga aat tgt      5184
Ala Phe  Leu His Ile Lys Thr  Gly Glu Trp Lys Lys  Gly Asn Cys
    1715                 1720                 1725

gaa gtt  tct tct gtg gaa gga  aca cta tgc aaa aca  gct atc cca      5229
Glu Val  Ser Ser Val Glu Gly  Thr Leu Cys Lys Thr  Ala Ile Pro
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tac aaa  agg aaa tat tta tca  gat aac cac att tta  ata tca gca      5274
Tyr Lys  Arg Lys Tyr Leu Ser  Asp Asn His Ile Leu  Ile Ser Ala
    1745                 1750                 1755

ttg gtg  att gct agc acg gta  att ttg aca gtt ttg  gga gca atc      5319
Leu Val  Ile Ala Ser Thr Val  Ile Leu Thr Val Leu  Gly Ala Ile
    1760                 1765                 1770

att tgg  ttc ctg tac aaa aaa  cat tct gat tct cgt  ttc acc aca      5364
Ile Trp  Phe Leu Tyr Lys Lys  His Ser Asp Ser Arg  Phe Thr Thr
    1775                 1780                 1785

gtt ttt  tca acc gca ccc caa  tca cct tat aat gaa  gac tgt gtt      5409
Val Phe  Ser Thr Ala Pro Gln  Ser Pro Tyr Asn Glu  Asp Cys Val
    1790                 1795                 1800

ttg gta  gtt gga gaa gaa aat  gaa tat cct gtt caa  ttt gac taa      5454
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            20                  25                  30

Asn Asp Pro Phe Thr Ile Val His Gly Asn Thr Gly Lys Cys Ile Lys
        35                  40                  45

Pro Val Tyr Gly Trp Ile Val Ala Asp Asp Cys Asp Glu Thr Glu Asp
    50                  55                  60

Lys Leu Trp Lys Trp Val Ser Gln His Arg Leu Phe His Leu His Ser
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Gln Lys Cys Leu Gly Leu Asp Ile Thr Lys Ser Val Asn Glu Leu Arg
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Met Phe Ser Cys Asp Ser Ser Ala Met Leu Trp Trp Lys Cys Glu His
100 105 110

His Ser Leu Tyr Gly Ala Ala Arg Tyr Arg Leu Ala Leu Lys Asp Gly
115 120 125

His Gly Thr Ala Ile Ser Asn Ala Ser Asp Val Trp Lys Lys Gly Gly
130 135 140

Ser Glu Glu Ser Leu Cys Asp Gln Pro Tyr His Glu Ile Tyr Thr Arg
145 150 155 160

Asp Gly Asn Ser Tyr Gly Arg Pro Cys Glu Phe Pro Phe Leu Ile Asp
165 170 175

Gly Thr Trp His His Asp Cys Ile Leu Asp Glu Asp His Ser Gly Pro
180 185 190

Trp Cys Ala Thr Thr Leu Asn Tyr Glu Tyr Asp Arg Lys Trp Gly Ile
195 200 205

Cys Leu Lys Pro Glu Asn Gly Cys Glu Asp Asn Trp Glu Lys Asn Glu
210 215 220

Gln Phe Gly Ser Cys Tyr Gln Phe Asn Thr Gln Thr Ala Leu Ser Trp
225 230 235 240

Lys Glu Ala Tyr Val Ser Cys Gln Asn Gln Gly Ala Asp Leu Leu Ser
245 250 255

Ile Asn Ser Ala Ala Glu Leu Thr Tyr Leu Lys Glu Lys Glu Gly Ile
260 265 270

Ala Lys Ile Phe Trp Ile Gly Leu Asn Gln Leu Tyr Ser Ala Arg Gly
275 280 285

Trp Glu Trp Ser Asp His Lys Pro Leu Asn Phe Leu Asn Trp Asp Pro
290 295 300

Asp Arg Pro Ser Ala Pro Thr Ile Gly Gly Ser Ser Cys Ala Arg Met
305 310 315 320

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Asp Ala Glu Ser Gly Leu Trp Gln Ser Phe Ser Cys Glu Ala Gln Leu
                325                 330                 335

Pro Tyr Val Cys Arg Lys Pro Leu Asn Asn Thr Val Glu Leu Thr Asp
            340                 345                 350

Val Trp Thr Tyr Ser Asp Thr Arg Cys Asp Ala Gly Trp Leu Pro Asn
        355                 360                 365

Asn Gly Phe Cys Tyr Leu Leu Val Asn Glu Ser Asn Ser Trp Asp Lys
    370                 375                 380

Ala His Ala Lys Cys Lys Ala Phe Ser Ser Asp Leu Ile Ser Ile His
385                 390                 395                 400

Ser Leu Ala Asp Val Glu Val Val Val Thr Lys Leu His Asn Glu Asp
                405                 410                 415

Ile Lys Glu Glu Val Trp Ile Gly Leu Lys Asn Ile Asn Ile Pro Thr
            420                 425                 430

Leu Phe Gln Trp Ser Asp Gly Thr Glu Val Thr Leu Thr Tyr Trp Asp
        435                 440                 445

Glu Asn Glu Pro Asn Val Pro Tyr Asn Lys Thr Pro Asn Cys Val Ser
    450                 455                 460



Tyr Leu Gly Glu Leu Gly Gln Trp Lys Val Gln Ser Cys Glu Glu Lys
465                 470                 475                 480

Leu Lys Tyr Val Cys Lys Arg Lys Gly Glu Lys Leu Asn Asp Ala Ser
                485                 490                 495

Ser Asp Lys Met Cys Pro Pro Asp Glu Gly Trp Lys Arg His Gly Glu
            500                 505                 510

Thr Cys Tyr Lys Ile Tyr Glu Asp Glu Val Pro Phe Gly Thr Asn Cys
        515                 520                 525

Asn Leu Thr Ile Thr Ser Arg Phe Glu Gln Glu Tyr Leu Asn Asp Leu
    530                 535                 540

Met Lys Lys Tyr Asp Lys Ser Leu Arg Lys Tyr Phe Trp Thr Gly Leu
545                 550                 555                 560

Arg Asp Val Asp Ser Cys Gly Glu Tyr Asn Trp Ala Thr Val Gly Gly
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Arg Arg Arg Ala Val Thr Phe Ser Asn Trp Asn Phe Leu Glu Pro Ala
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Ser Pro Gly Gly Cys Val Ala Met Ser Thr Gly Lys Ser Val Gly Lys
595 600 605

Trp Glu Val Lys Asp Cys Arg Ser Phe Lys Ala Leu Ser Ile Cys Lys
610 615 620

Lys Met Ser Gly Pro Leu Gly Pro Glu Glu Ala Ser Pro Lys Pro Asp
625 630 635 640

Asp Pro Cys Pro Glu Gly Trp Gln Ser Phe Pro Ala Ser Leu Ser Cys
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Tyr Lys Val Phe His Ala Glu Arg Ile Val Arg Lys Arg Asn Trp Glu
660 665 670

Glu Ala Glu Arg Phe Cys Gln Ala Leu Gly Ala His Leu Ser Ser Phe
675 680 685

Ser His Val Asp Glu Ile Lys Glu Phe Leu His Phe Leu Thr Asp Gln
690 695 700

Phe Ser Gly Gln His Trp Leu Trp Ile Gly Leu Asn Lys Arg Ser Pro
705 710 715 720

Asp Leu Gln Gly Ser Trp Gln Trp Ser Asp Arg Thr Pro Val Ser Thr
725 730 735

Ile Ile Met Pro Asn Glu Phe Gln Gln Asp Tyr Asp Ile Arg Asp Cys
740 745 750

Ala Ala Val Lys Val Phe His Arg Pro Trp Arg Arg Gly Trp His Phe
755 760 765

Tyr Asp Asp Arg Glu Phe Ile Tyr Leu Arg Pro Phe Ala Cys Asp Thr
770 775 780

Lys Leu Glu Trp Val Cys Gln Ile Pro Lys Gly Arg Thr Pro Lys Thr
785 790 795 800

Pro Asp Trp Tyr Asn Pro Asp Arg Ala Gly Ile His Gly Pro Pro Leu
805 810 815

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Ile Ile Glu Gly Ser Glu Tyr Trp Phe Val Ala Asp Leu His Leu Asn
            820                 825                 830

Tyr Glu Glu Ala Val Leu Tyr Cys Ala Ser Asn His Ser Phe Leu Ala
        835                 840                 845

Thr Ile Thr Ser Phe Val Gly Leu Lys Ala Ile Lys Asn Lys Ile Ala
    850                 855                 860

Asn Ile Ser Gly Asp Gly Gln Lys Trp Trp Ile Arg Ile Ser Glu Trp
865                 870                 875                 880

Pro Ile Asp Asp His Phe Thr Tyr Ser Arg Tyr Pro Trp His Arg Phe
                885                 890                 895

Pro Val Thr Phe Gly Glu Glu Cys Leu Tyr Met Ser Ala Lys Thr Trp
            900                 905                 910



Leu Ile Asp Leu Gly Lys Pro Thr Asp Cys Ser Thr Lys Leu Pro Phe
        915                 920                 925

Ile Cys Glu Lys Tyr Asn Val Ser Ser Leu Glu Lys Tyr Ser Pro Asp
    930                 935                 940

Ser Ala Ala Lys Val Gln Cys Ser Glu Gln Trp Ile Pro Phe Gln Asn
945                 950                 955                 960

Lys Cys Phe Leu Lys Ile Lys Pro Val Ser Leu Thr Phe Ser Gln Ala
                965                 970                 975

Ser Asp Thr Cys His Ser Tyr Gly Gly Thr Leu Pro Ser Val Leu Ser
            980                 985                 990

Gln Ile Glu Gln Asp Phe Ile Thr  Ser Leu Leu Pro Asp  Met Glu Ala
        995                 1000                1005

Thr Leu  Trp Ile Gly Leu Arg  Trp Thr Ala Tyr Glu  Lys Ile Asn
    1010                1015                1020

Lys Trp  Thr Asp Asn Arg Glu  Leu Thr Tyr Ser Asn  Phe His Pro
    1025                1030                1035

Leu Leu  Val Ser Gly Arg Leu  Arg Ile Pro Glu Asn  Phe Phe Glu
    1040                1045                1050

Glu Glu  Ser Arg Tyr His Cys  Ala Leu Ile Leu Asn  Leu Gln Lys
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Ser Pro Phe Thr Gly Thr Trp Asn Phe Thr Ser Cys Ser Glu Arg
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His Phe Val Ser Leu Cys Gln Lys Tyr Ser Glu Val Lys Ser Arg
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Gln Thr Leu Gln Asn Ala Ser Glu Thr Val Lys Tyr Leu Asn Asn
1100 1105 1110

Leu Tyr Lys Ile Ile Pro Lys Thr Leu Thr Trp His Ser Ala Lys
1115 1120 1125

Arg Glu Cys Leu Lys Ser Asn Met Gln Leu Val Ser Ile Thr Asp
1130 1135 1140

Pro Tyr Gln Gln Ala Phe Leu Ser Val Gln Ala Leu Leu His Asn
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Ser Ser Leu Trp Ile Gly Leu Phe Ser Gln Asp Asp Glu Leu Asn
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1175 1180 1185

Glu Thr Asn Gly Gln Leu Glu Asp Cys Val Val Leu Asp Thr Asp
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Gly Phe Trp Lys Thr Val Asp Cys Asn Asp Asn Gln Pro Gly Ala
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Ile Cys Tyr Tyr Ser Gly Asn Glu Thr Glu Lys Glu Val Lys Pro
1220 1225 1230

Val Asp Ser Val Lys Cys Pro Ser Pro Val Leu Asn Thr Pro Trp
1235 1240 1245

Ile Pro Phe Gln Asn Cys Cys Tyr Asn Phe Ile Ile Thr Lys Asn
1250 1255 1260

Arg His Met Ala Thr Thr Gln Asp Glu Val His Thr Lys Cys Gln
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Lys Leu Asn Pro Lys Ser His Ile Leu Ser Ile Arg Asp Glu Lys
1280 1285 1290

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Glu Asn  Asn Phe Val Leu Glu  Gln Leu Leu Tyr Phe  Asn Tyr Met
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Ala Ser  Trp Val Met Leu Gly  Ile Thr Tyr Arg Asn  Asn Ser Leu
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Met Trp  Phe Asp Lys Thr Pro  Leu Ser Tyr Thr His  Trp Arg Ala
    1325                 1330                 1335


Gly Arg  Pro Thr Ile Lys Asn  Glu Lys Phe Leu Ala  Gly Leu Ser
    1340                 1345                 1350

Thr Asp  Gly Phe Trp Asp Ile  Gln Thr Phe Lys Val  Ile Glu Glu
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Ala Val  Tyr Phe His Gln His  Ser Ile Leu Ala Cys  Lys Ile Glu
    1370                 1375                 1380

Met Val  Asp Tyr Lys Glu Glu  His Asn Thr Thr Leu  Pro Gln Phe
    1385                 1390                 1395

Met Pro  Tyr Glu Asp Gly Ile  Tyr Ser Val Ile Gln  Lys Lys Val
    1400                 1405                 1410

Thr Trp  Tyr Glu Ala Leu Asn  Met Cys Ser Gln Ser  Gly Gly His
    1415                 1420                 1425

Leu Ala  Ser Val His Asn Gln  Asn Gly Gln Leu Phe  Leu Glu Asp
    1430                 1435                 1440

Ile Val  Lys Arg Asp Gly Phe  Pro Leu Trp Val Gly  Leu Ser Ser
    1445                 1450                 1455

His Asp  Gly Ser Glu Ser Ser  Phe Glu Trp Ser Asp  Gly Ser Thr
    1460                 1465                 1470

Phe Asp  Tyr Ile Pro Trp Lys  Gly Gln Thr Ser Pro  Gly Asn Cys
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Val Leu  Leu Asp Pro Lys Gly  Thr Trp Lys His Glu  Lys Cys Asn
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Ser Val  Lys Asp Gly Ala Ile  Cys Tyr Lys Pro Thr  Lys Ser Lys
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Lys Leu  Ser Arg Leu Thr Tyr  Ser Ser Arg Cys Pro  Ala Ala Lys
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Ser Asp Gln Ala Leu His Ser Phe Ser Glu Ala Lys Lys Leu Cys
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Ser Lys His Asp His Ser Ala Thr Ile Val Ser Ile Lys Asp Glu
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Asp Glu Asn Lys Phe Val Ser Arg Leu Met Arg Glu Asn Asn Asn
1580 1585 1590

Ile Thr Met Arg Val Trp Leu Gly Leu Ser Gln His Ser Val Asp
1595 1600 1605

Cys Pro Ser Ser Thr Trp Ile Gln Phe Gln Asp Ser Cys Tyr Ile
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Phe Leu Gln Glu Ala Ile Lys Val Glu Ser Ile Glu Asp Val Arg
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Asn Gln Cys Thr Asp His Gly Ala Asp Met Ile Ser Ile His Asn
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Glu Glu Glu Asn Ala Phe Ile Leu Asp Thr Leu Lys Lys Gln Trp
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Lys Gly Pro Asp Asp Ile Leu Leu Gly Met Phe Tyr Asp Thr Asp
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Asp Ala Ser Phe Lys Trp Phe Asp Asn Ser Asn Met Thr Phe Asp
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Ala Phe Leu His Ile Lys Thr Gly Glu Trp Lys Lys Gly Asn Cys
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Glu Val Ser Ser Val Glu Gly Thr Leu Cys Lys Thr Ala Ile Pro
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Leu Val Ile Ala Ser Thr Val Ile Leu Thr Val Leu Gly Ala Ile
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